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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/648,586

08/26/2003

Efren M. Lacap

408204

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07/05/2007

LATHROP & GAGE LC  
4845 PEARL EAST CIRCLE  
SUITE 300  
BOULDER, CO 80301

EXAMINER

BEVERIDGE, RACHEL E

ART UNIT

PAPER NUMBER

1725

MAIL DATE

DELIVERY MODE

07/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Advisory Action</b> <b>Before the Filing of an Appeal Brief</b></p>	<b>Application No.</b> 10/648,586	<b>Applicant(s)</b> LACAP ET AL.	
	<b>Examiner</b> Rachel E. Beveridge	<b>Art Unit</b> 1725	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 04 June 2007 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
 b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☒ The Notice of Appeal was filed on 16 May 2007. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
 (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
 (b) ☐ They raise the issue of new matter (see NOTE below);  
 (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
 (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
 5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
 6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
 7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
 The status of the claim(s) is (or will be) as follows:  
 Claim(s) allowed: \_\_\_\_\_.  
 Claim(s) objected to: \_\_\_\_\_.  
 Claim(s) rejected: 1-17 and 25-29.  
 Claim(s) withdrawn from consideration: 12-17.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
 9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
 10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: \_\_\_\_\_.  
 12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
 13. ☒ Other: See Continuation Sheet.

/reb/  
29 June 2007

Continuation of 13. Other: Applicant has made no request for reconsideration after final rejection, and the amendment filed June 4, 2007 is not deemed to overcome the prior art rejection of record or include any new issues which require further search and/or consideration, but rather the claim amendments are entered to clarify the clarity of the claim language. Thus, the final rejection of record mailed on February 16, 2007 is maintained as that no substantive amendment or request for reconsideration has been made by the applicant in order to overcome the rejection and prior art of record.

## CONTINUATION OF ITEM 7

### 7b) Explanation of how the amended claims would be rejected

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of US 6,372,622 (Tan) and US 4,808,274 (Nguyen). AAPA teaches forming a socket on a first surface of a microchip, such that the socket has predetermined physical dimensions complementary to those of a microchip connection pad footprint occupied by at least one contact pad area on the microchip (fig. 2, item 29), the socket presenting a conductive base capable of bonding to solder; forming a solder layer (figure 2, items 3a, 3b, 3c where the layer comprises discrete units of solder balls) in substantially continuous contact with the conductive base (where the solder is in continuous contact with the conductive base) to place a solder bar (where the examiner interprets the solder ball to be a thin solder bar) in the socket and place the microchip in made-ready condition for installation. (fig. 2, item 3a); wherein the microchip contains a silicon wafer and the step of forming the socket comprises depositing an adhesion layer onto the wafer, and depositing under-bump-metallization (UBM) material contacting the adhesion layer to complete formation of the conductive base (figure 2, items 4, 28 and 29); wherein the step of depositing the

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adhesion layer includes depositing a conductor selected from the group consisting of aluminum, nickel-vanadium, titanium, tungsten and copper (specification, paragraph 7); wherein the step of depositing the UMB material includes depositing a conductor selected from at least one of titanium, tungsten, vanadium, tin, copper, aluminum, gold, silver, and lead (specification, paragraph 8); wherein the step of forming the socket includes the predetermined dimensions selected from the group consisting of rectangular, "E," "L," and "U" shapes (figure 2, side profile of item 29); wherein the step of forming the socket includes the physical dimensions selected from the group consisting of ring, square, and circular shapes (figure 2, top view of item 20a); , wherein the step of forming the socket includes the physical dimensions being complimentary to the solder bar having a planar rectilinear configuration (figure 2, side view of 20A); wherein the step of forming the socket includes the physical dimensions being complimentary to the solder bar having a planar curvilinear configuration (figure 2, top view of 20a); wherein the step of forming the socket includes the physical dimensions being complimentary to the solder bar having a planar curvilinear configuration (figure 2, item 3a); wherein the step of forming the socket further comprising a step of forming a passivation layer on substantially all of the first surface, exclusive of an area where the socket is located (figure 2, item 29); wherein the step of forming the passivation layer includes the steps of: applying one or more layers of passivation material to the entire first surface; and removing selected portions of the passivation material covering the area where the socket is to be located (figure 2, item 29); wherein the step of applying one or more layers of passivation material includes applying at least one layer selected

from the group consisting of polysilicon, silicon dioxide, and benzocyclobutane (figure 2, item 28); where the corresponding circuit connection comprises one of a PCB, another chip, and a ceramic interposer (figure 2, items 26 and 1). Tan teaches the interchangeability between a solder ball and a solder rectangle (col. 4, ll. 20-30) and where the solder bonds to copper (figure 4, item 30). Nguyen teaches forming including depositing an adhesion layer via a screen printing process (col. 2, ll. 60-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shape of the solder to utilize a rectangle in order to form a reliable electrical connection (see Tan col. 1, ll. 5-55); and to utilize copper as the UBM in order to effectively bond the solder to the substrate (see Tan col. 1, ll. 5-55) and further to modify the combined invention of Tan and AAPA to utilize screen printing in order to reduce the manufacturing costs (see Nguyen col. 2, l. 50 to col. 3, l. 25).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Tan, and Nguyen as applied to claim 1 above and further in view of US 6,977,396 (Shen). Shen teaches replacing older balls with a solder bar (col. 6, ll. 30-40). It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the solder to utilize a solder bar in order to increase the area of interconnect (see Shen col. 6, ll. 30-45).

Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Tan, and Nguyen as applied to claim 1 above and further in view of US 2003/0157789 (Tong). Tong teaches the adhesion layer can be applied by electroplating and screen printing and the UBM can be applied by sputtering (paragraphs 7 and 32). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the layers to utilize the claimed deposition process in order to ensure the layers are adequately formed (see Tong col. 10-32).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel E. Beveridge whose telephone number is 571-272-5169. The examiner can normally be reached on Monday through Friday, 9 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**JONATHAN JOHNSON**  
**PRIMARY EXAMINER**

/reb/  
29 June 2007